

International General Certificate of Secondary Education
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE

PHYSICS

0625/1

PAPER 1 Multiple Choice

Wednesday

19 MAY 1999

Morning

45 minutes

Additional materials:

Electronic calculator and/or Mathematical tables

Multiple Choice answer sheet

Soft clean eraser

Soft pencil (type B or HB is recommended)

TIME 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not open this booklet until you are told to do so.

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are **forty** questions in this paper. Answer **all** questions. For each question, there are four possible answers, **A**, **B**, **C** and **D**. Choose the **one** you consider correct and record your choice in **soft pencil** on the separate answer sheet.

Read very carefully the instructions on the answer sheet.

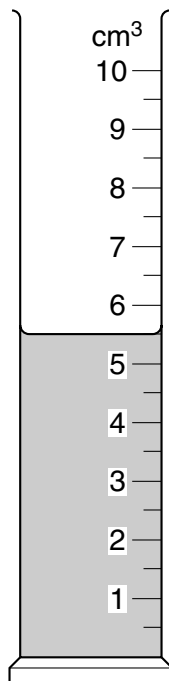
INFORMATION FOR CANDIDATES

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

Any rough working should be done in this booklet.

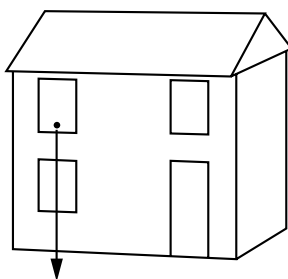
This question paper consists of 19 printed pages and 1 blank page.

- 1 A measuring cylinder contains some liquid.



What does the reading of the measuring cylinder scale give?

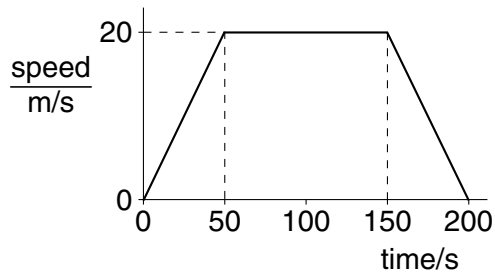
- A the density of the liquid
 - B the height of the liquid
 - C the mass of the liquid
 - D the volume of the liquid
- 2 A tennis ball falls from the upstairs window of a house.



Ignoring air resistance, what happens to the acceleration of the ball?

- A It decreases.
- B It increases.
- C It is constant.
- D It is zero.

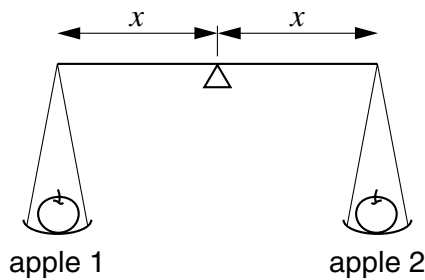
3 The graph shows how the speed of a car changes over 200 s.



For how many seconds is the car moving at constant speed?

- A** 50 s **B** 100 s **C** 150 s **D** 200 s

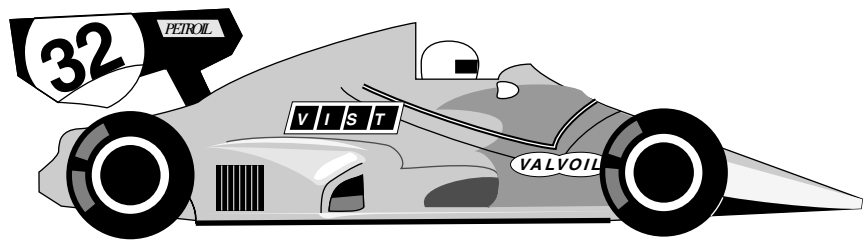
4 Two apples are placed on a balance. The balance stays level.



What does this show about the mass and the weight of the apples?

	mass of apples	weight of apples
A	different	different
B	different	the same
C	the same	different
D	the same	the same

5 The diagram shows a racing car.

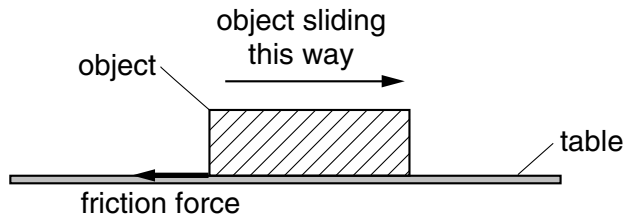


Where should the centre of mass be, and why?

	centre of mass	
	where	why
A	as high as possible	to give the car more acceleration
B	as high as possible	to give the car more stability
C	as low as possible	to give the car more acceleration
D	as low as possible	to give the car more stability

6 An object is pushed and then allowed to slide along a table.

The diagram shows the direction of the friction force acting on the object.

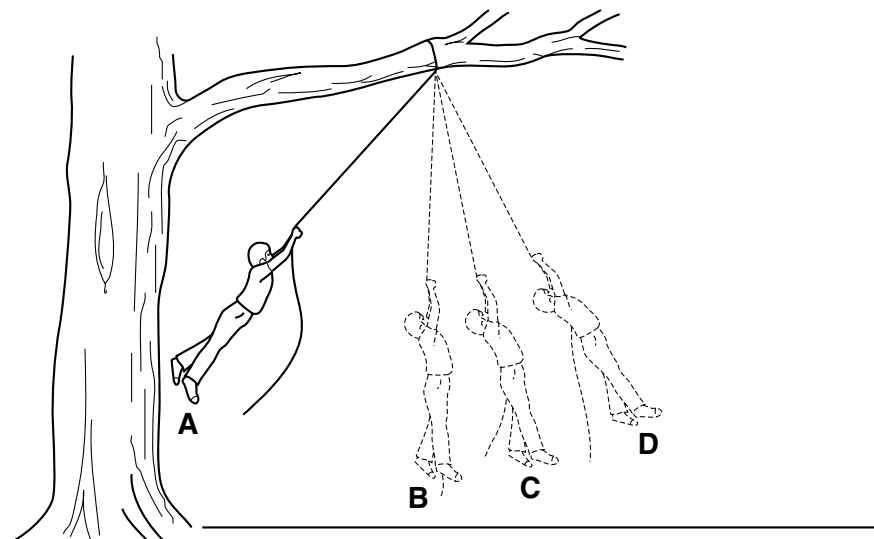


What is the effect of the friction force on the sliding object?

- A It has no effect.
- B It increases the object's weight.
- C It slows the object down.
- D It speeds the object up.

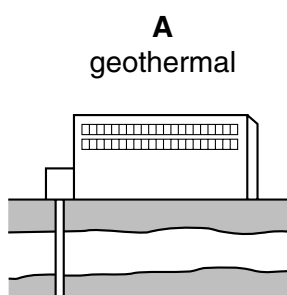
- 7 A student swings on a rope tied to a branch of a tree.

At which position is the student's energy of motion (kinetic energy) the greatest?

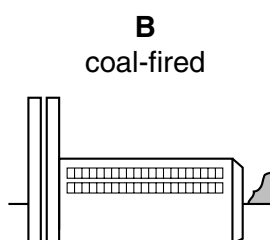


- 8 The diagram shows four types of power station.

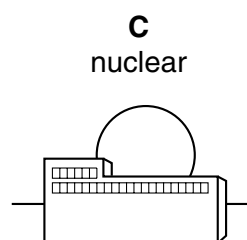
Which type of power station uses chemical energy to generate electricity?



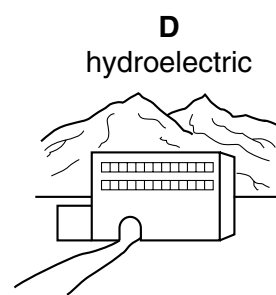
hot rocks heat
water, steam turns
turbine and generator



coal burned to heat
water, steam turns
turbine and generator



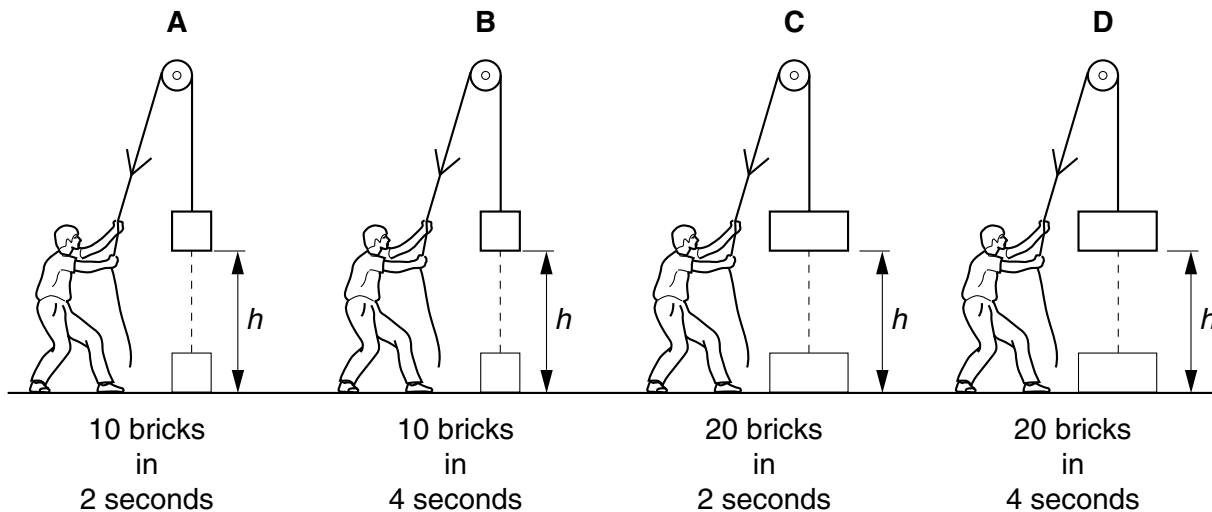
nuclear fuel heats
water, steam turns
turbine and generator



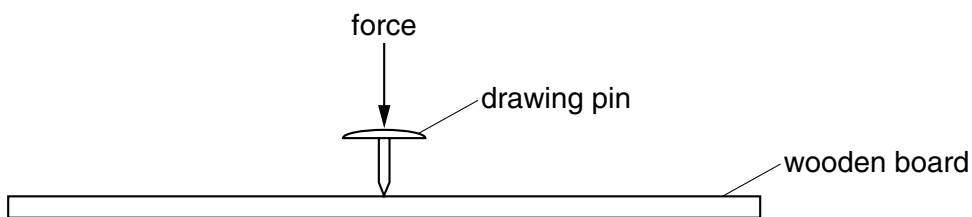
water from mountain
reservoir turns
turbine and generator

- 9 Four people each have to lift bricks to the same height with a rope and pulley. Some lift more bricks, and some lift the bricks faster.

Which person develops the most power?



- 10 The diagram shows a drawing pin (thumb tack) and a wooden board.



The drawing pin is easily pushed into the wooden board.

Why is this?

- A The flat head raises the centre of mass.
- B The force produces a large moment about the point.
- C The large area of the flat head increases the force.
- D The small area of the point increases the pressure.

- 11 A liquid evaporates quickly.

How does its temperature change, and which of its molecules leave the surface?

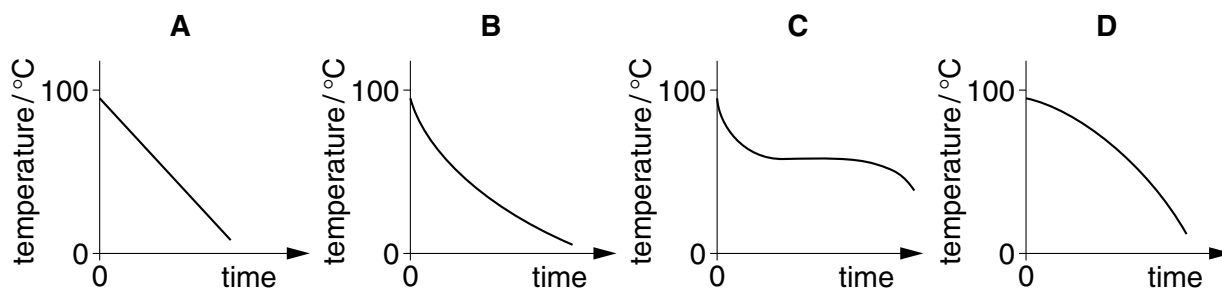
	temperature change	molecules leaving surface
A	rises	fastest-moving
B	rises	slowest-moving
C	falls	fastest-moving
D	falls	slowest-moving

- 12 A pupil looks through a microscope into a small, glass container in which tiny smoke particles have been mixed with air. The container is very brightly lit and the pupil sees bright specks moving randomly.

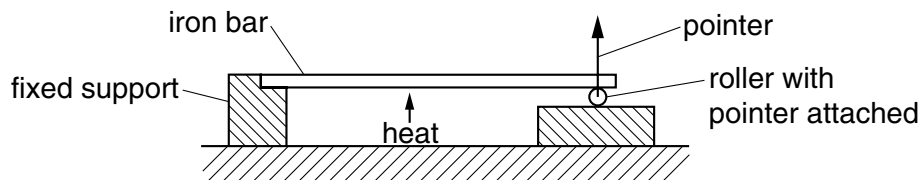
What are these specks?

- A** air molecules being hit by air molecules
B air molecules being hit by smoke particles
C smoke particles being hit by air molecules
D smoke particles being hit by smoke particles
- 13 A substance that melts at 60°C is heated in a test-tube to a temperature of 95°C . The substance is then allowed to cool.

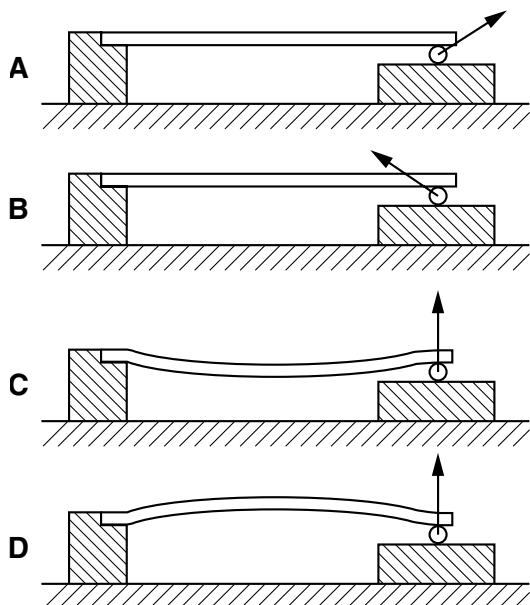
Which graph best shows how the temperature changes with time as the substance cools?



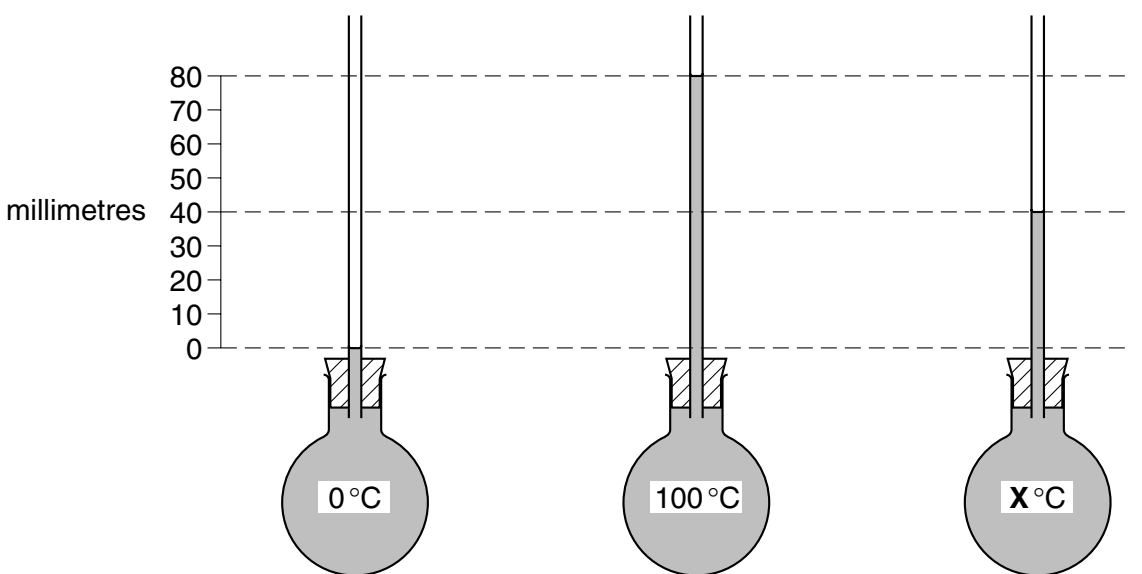
- 14 The diagram shows an experiment to investigate the effect of a rise in temperature on an iron bar.



What would be seen after heating?



- 15 A flask with a narrow tube contains some coloured liquid. The diagram shows the height of the liquid column at 0°C , 100°C and $X^{\circ}\text{C}$.

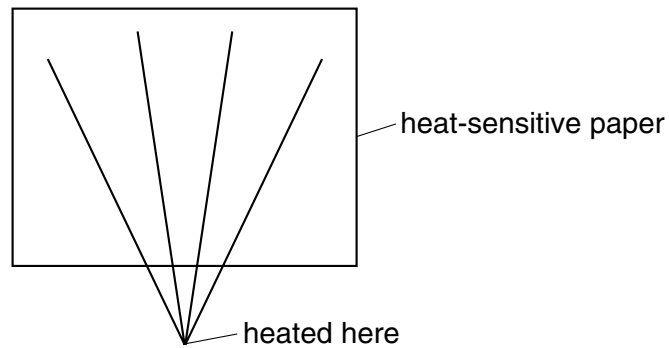


The liquid expands uniformly with temperature.

What is temperature X ?

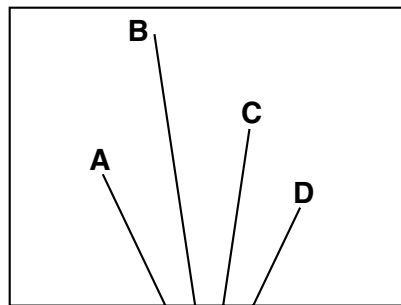
- A 40°C B 50°C C 60°C D 80°C

- 16** Four wires of equal length, made of different materials, are placed on heat-sensitive paper. The four ends of the wire are put together, as shown, and are heated for three minutes.



Heat-sensitive paper changes colour when it gets hot. The diagram below shows the marks on the heat-sensitive paper due to the conduction of heat energy along the wires.

Which mark was made by the best conductor of heat?

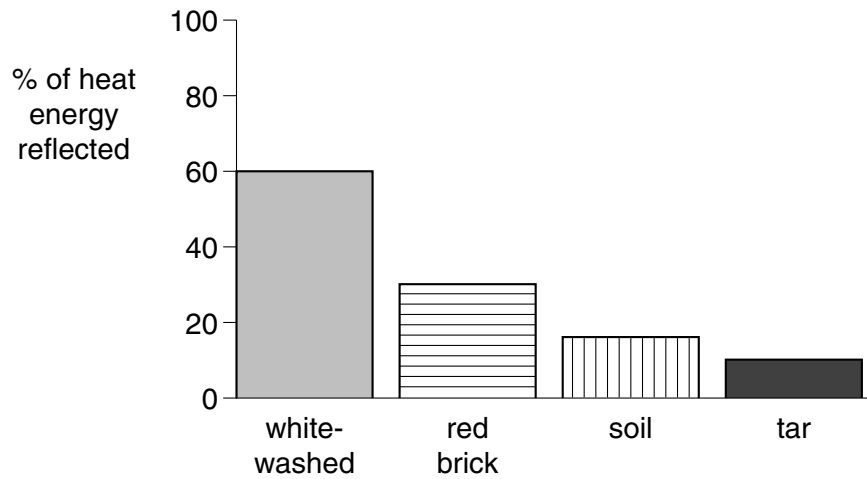


- 17** A hot-air balloon rises when the air inside it is heated.

Why does this happen?

- A** The air contracts and becomes less dense.
- B** The air contracts and becomes more dense.
- C** The air expands and becomes less dense.
- D** The air expands and becomes more dense.

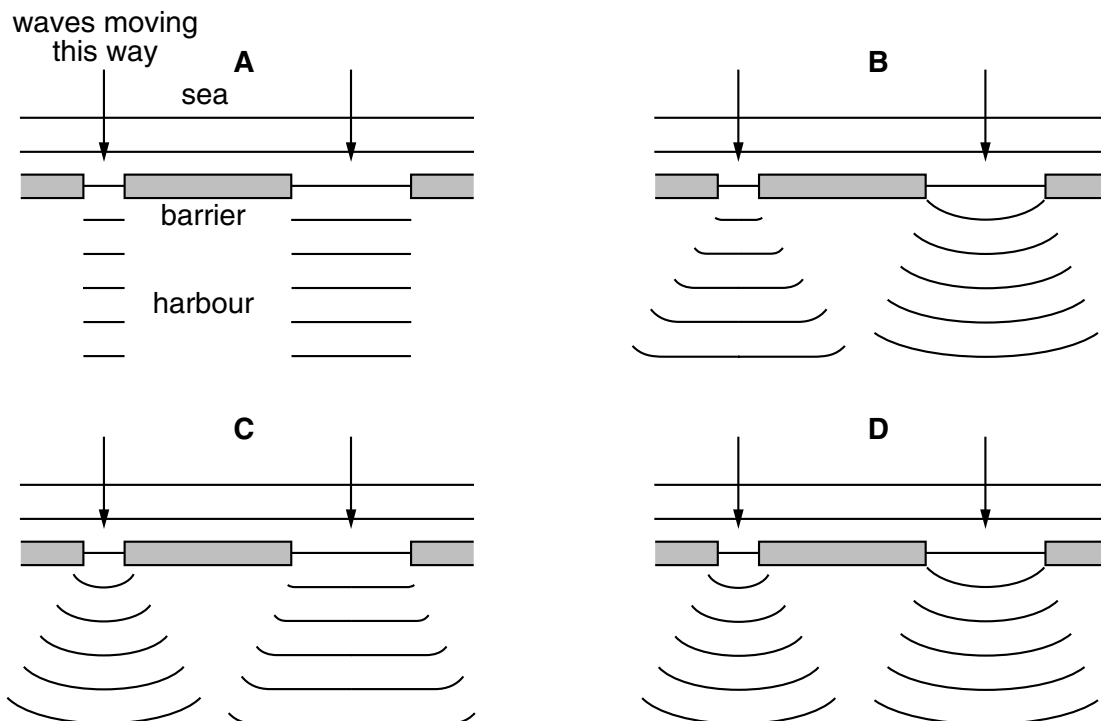
- 18** Different surfaces reflect different proportions of the Sun's radiant energy. The chart shows the percentage of heat energy that is reflected by some surfaces.



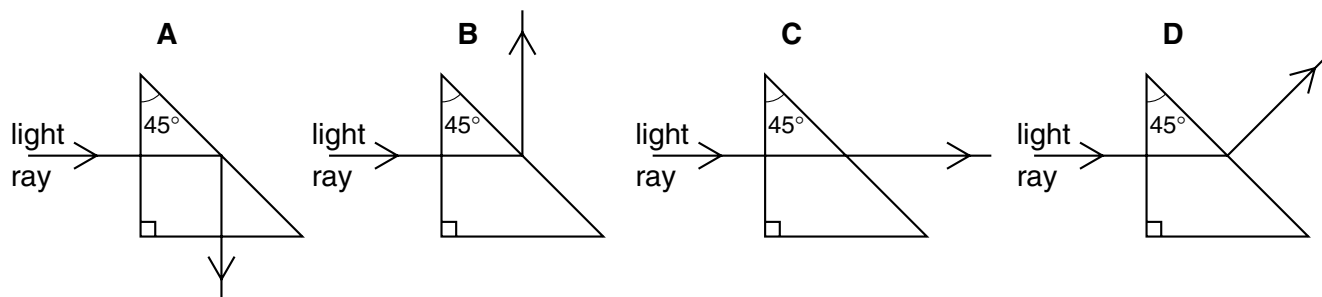
What is the best way to treat a flat roof so as to increase the amount of heat absorbed by the roof?

- A** cover it with a layer of red brick dust
 - B** cover it with a layer of soil
 - C** paint it with tar
 - D** paint it with whitewash
- 19** A barrier lies at the mouth of a harbour. It is closer to one side of the mouth of the harbour than the other. Sea waves come towards the harbour and pass through the two gaps.

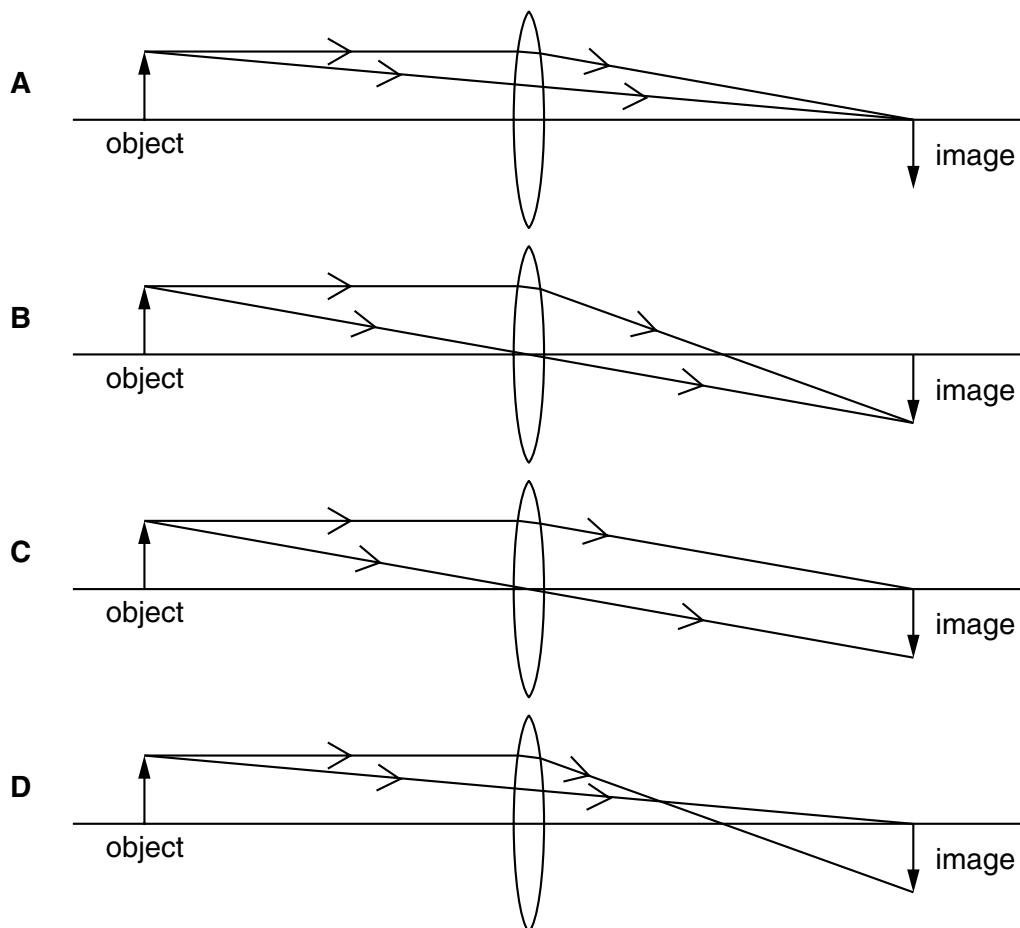
Which diagram shows the pattern that the waves make when they pass through the gaps?



20 Which diagram shows the path of a ray of light through a glass prism and into the air beyond?



21 Which diagram shows how a converging lens in a camera forms an image on the film?



22 What is heard when the frequency of a sound wave is increased at constant amplitude?

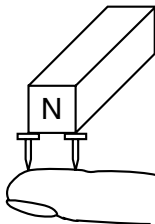
- A** higher pitch
- B** lower pitch
- C** louder sound
- D** quieter sound

- 23** A bat is flying near a house. It makes a high-pitched sound. It hears the echo 0.5 s later. The speed of sound in air is 300 m/s.

How far away is the house from the bat?

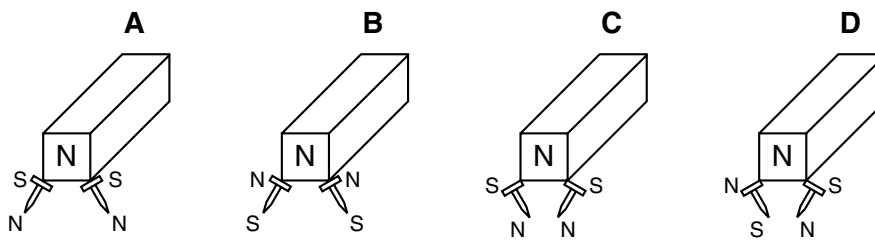
- A** 600 m **B** 300 m **C** 150 m **D** 75 m

- 24** A student holds two pins on to a magnet as shown.

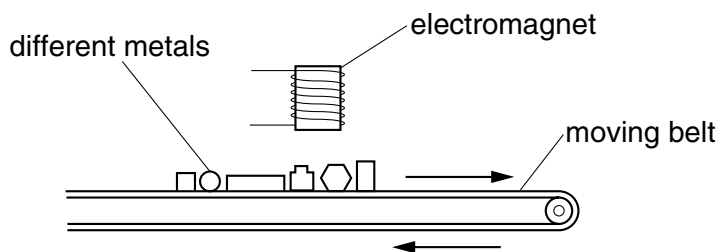


The student removes his thumb.

Which diagram shows the positions of the pins and the poles induced on them?



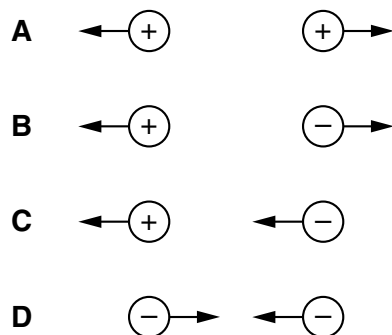
- 25** Different metals are separated by passing them under an electromagnet, which attracts and lifts out some of the metals.



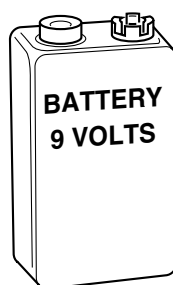
Which line in the table shows what happens to the metals?

	attracted	not attracted
A	copper	aluminium
B	copper	steel
C	iron	aluminium
D	iron	steel

26 Which diagram shows the directions of the forces between two charged particles?



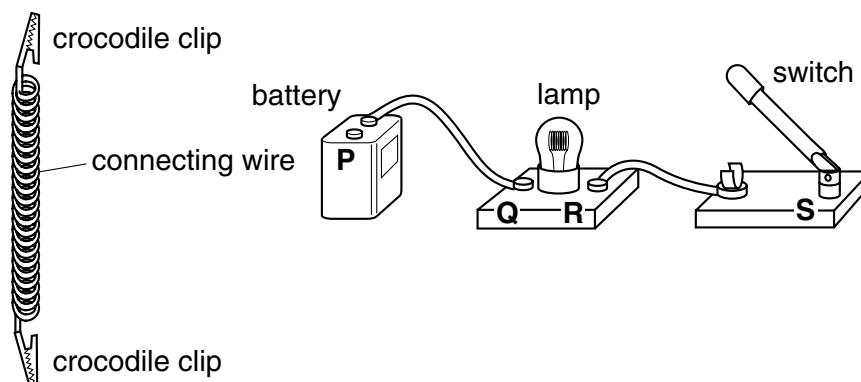
27 A battery is labelled '9 VOLTS'.



Which information does the label give about the battery?

- A** the power it can supply
- B** the current it can supply
- C** its electromotive force (e.m.f.)
- D** its resistance

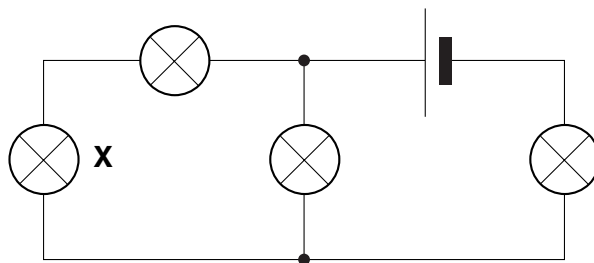
28 The diagram shows how a student has connected some electrical components. The lamp does not light because the circuit has not been completed.



Where must the crocodile clips be connected, so that the lamp lights only when the switch is closed?

- A** at **P** and **R**
- B** at **P** and **S**
- C** at **Q** and **R**
- D** at **Q** and **S**

29 The diagram shows a circuit in which all the lamps are lit.

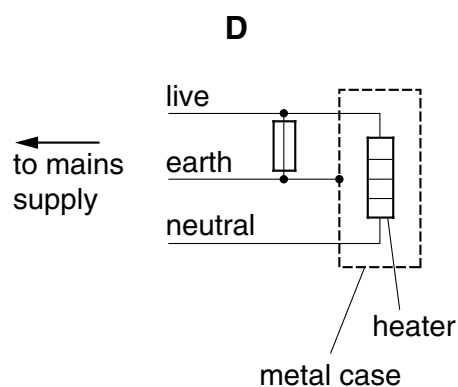
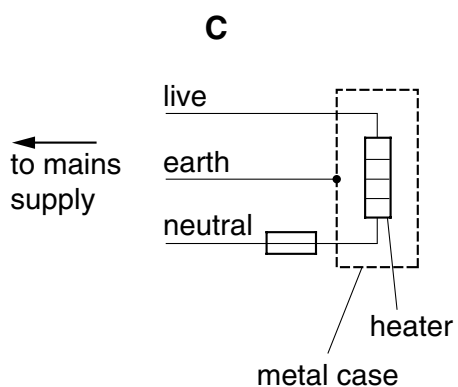
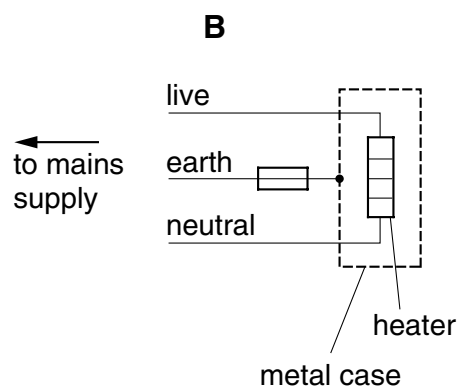
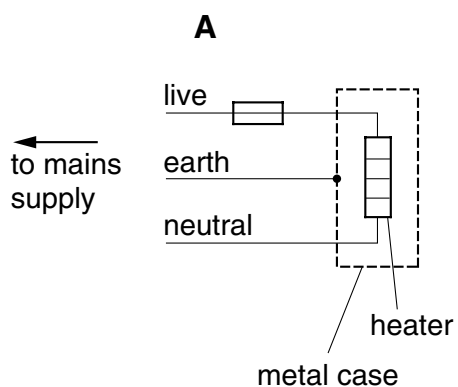


The lamp marked **X** blows and breaks the circuit.

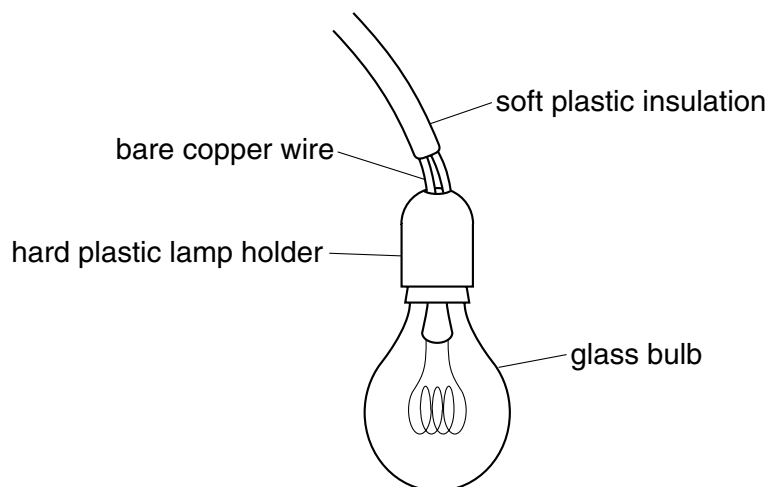
How many lamps remain lit?

- A** 0 **B** 1 **C** 2 **D** 3

30 In which diagram is the fuse correctly connected?



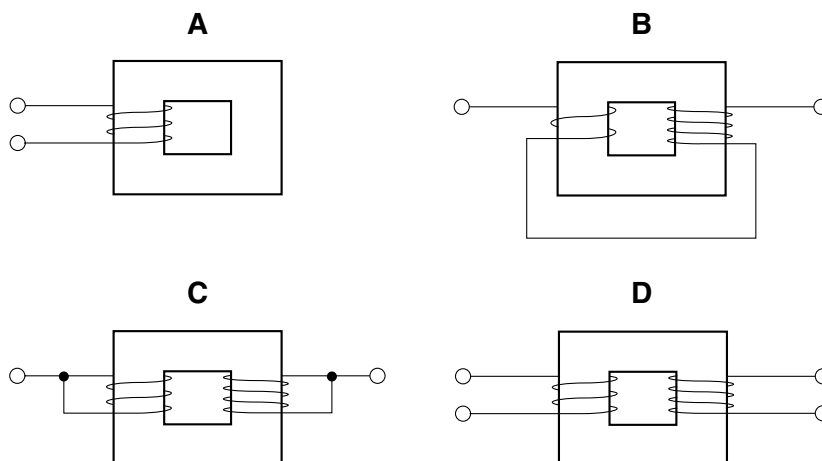
31 The diagram shows an electrical hazard.



Which part gives an electric shock if touched?

- A** soft plastic insulation
- B** bare copper wire
- C** hard plastic lamp holder
- D** glass bulb

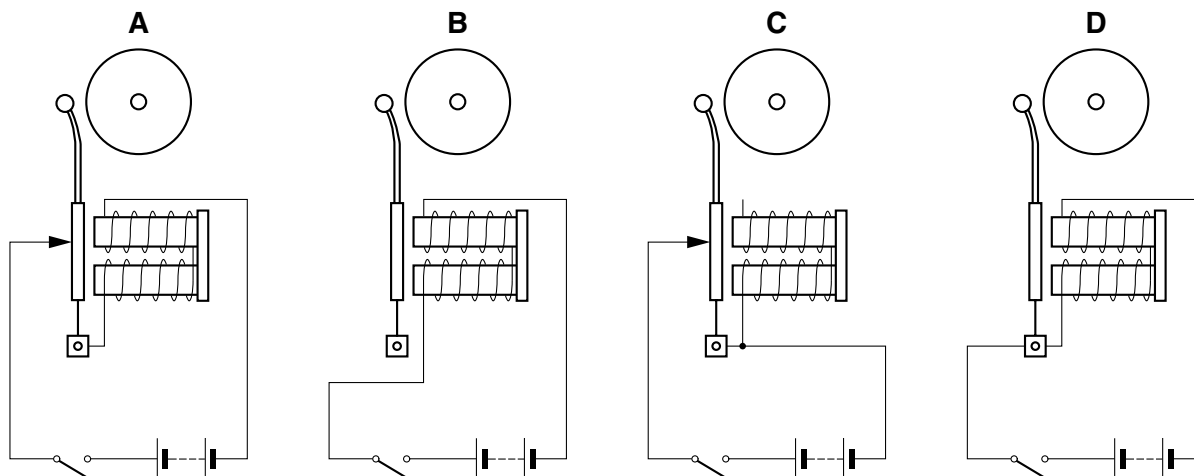
32 Which diagram shows the correct wiring of a transformer?



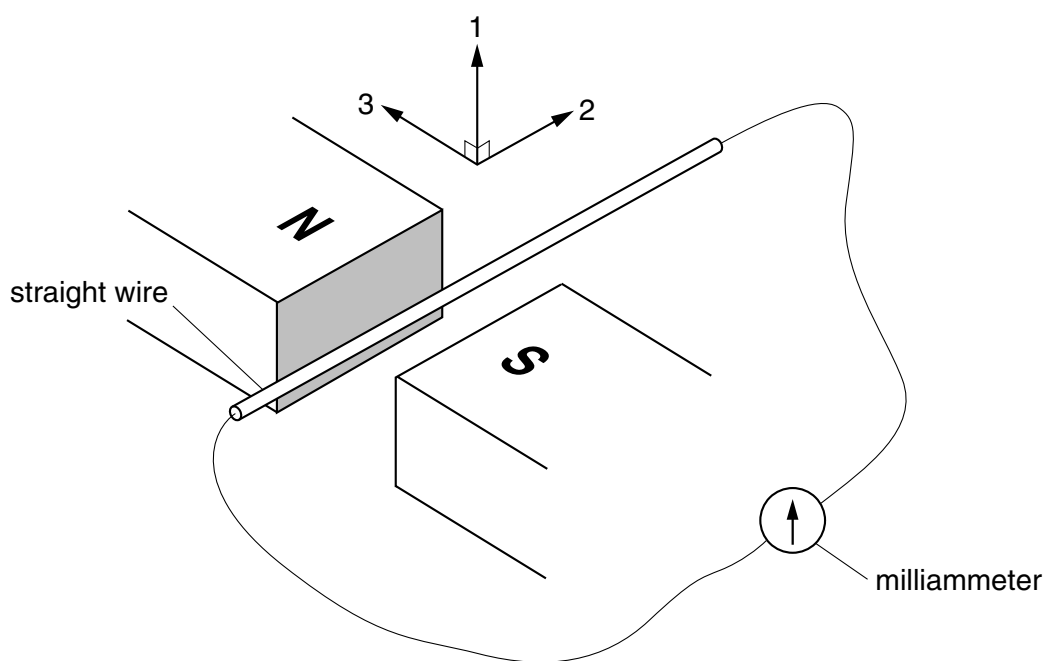
33 Which object makes use of the force on a current-carrying conductor in a magnetic field?

- A** electric fan
- B** electric kettle
- C** lamp
- D** transformer

34 Which diagram shows an electric bell correctly connected?



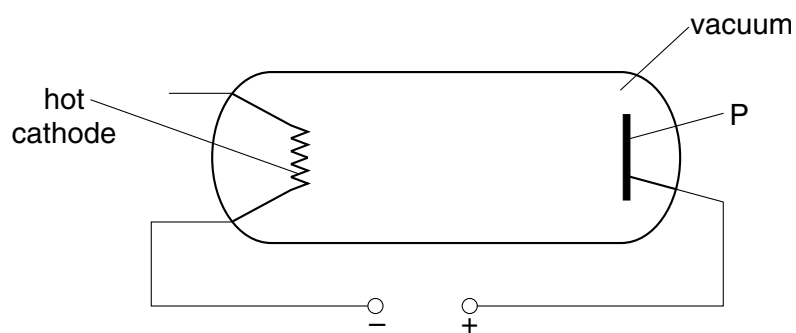
35 A straight wire connected to a milliammeter is placed between the poles of a magnet.



Which change causes a current in the milliammeter?

- A moving the wire in direction 1
- B moving the wire in direction 2
- C moving the magnet in direction 2
- D moving the magnet in direction 3

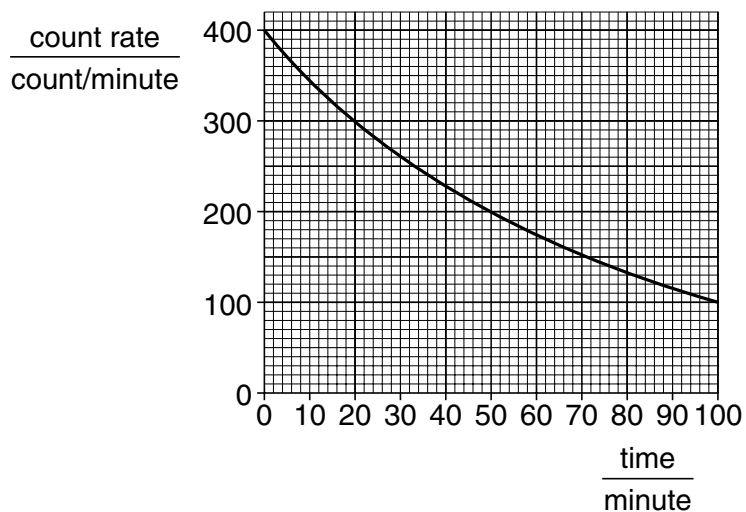
- 36** Particles given off by a hot cathode in a vacuum are attracted to a plate P. There is a high potential difference between the cathode and plate as shown.



What are these particles?

- A** α -particles
 - B** electrons
 - C** neutrons
 - D** protons
- 37** Which of the following is a correct statement about β -particles?
- A** They are fast-moving electrons.
 - B** They are more ionising than α -particles.
 - C** They are stopped by a thin sheet of paper.
 - D** They can pass through a thick sheet of lead.

38 The graph shows how the activity of a radioactive source varies with time.



What is the half-life of the source?

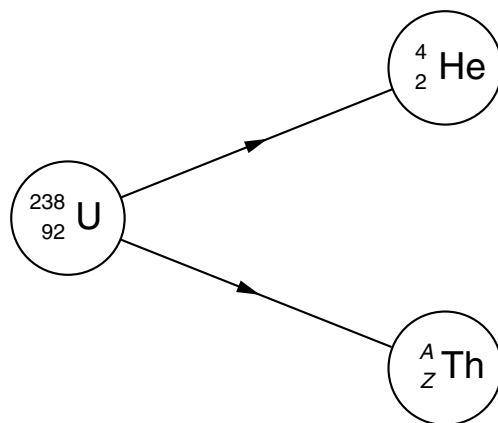
- A** 50 minutes
- B** 100 minutes
- C** 200 minutes
- D** 400 minutes

39 Hydrogen may be written as ${}^1_1\text{H}$.

Which line is correct for a neutral hydrogen atom?

	number of electrons	number of protons	number of neutrons
A	0	1	1
B	1	0	1
C	1	1	0
D	1	1	1

40 The diagram represents the radioactive decay of a nucleus.



What are the values of A and Z ?

	A	Z
A	238	93
B	238	92
C	236	88
D	234	90

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